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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,363	03/08/2002	David Coates	MERCK 2389	4623

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EXAMINER

CALEY, MICHAEL H

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,363

Applicant(s)

COATES ET AL.

Examiner

Michael H. Caley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aminaka et al. (European Patent Application EP 0864906 "Aminaka '906") in view of Koch et al. (U.S. Patent No. 5,619,352 "Koch").

Regarding claim 1, Aminaka '906 discloses a liquid crystal display having a diacetyl cellulose (DAC) film having the optical properties of a negative C plate (Page 12 lines 49-58, Page 13 lines 1-5). Aminaka '906 fails to disclose the liquid crystal display as also having an O plate. Aminaka '906, however, discloses an optically anisotropic layer having the properties of an O plate retarder (Figure 5 element 51, Page 8 lines 43-47). Koch teaches the use of such a twisted or splayed O plate layer as a means of making an improvement in the gray scale properties and contrast ratios of liquid crystal displays (Column 10 lines 51-59).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an O plate layer in the liquid crystal display disclosed by Aminaka '906. As recognized by Aminaka '906 and Koch, such a compensator having positively birefringent material aligned obliquely to the plane of the layer would have been advantageous to act as a retarder to improve the contrast and gray scale properties of the display from wide viewing angles. One would have been motivated to include such an imaging enhancing mechanism in an

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LCD device in order to improve viewing from wide angles, thus improving the versatility and marketability of the device.

Regarding claim 2, Aminaka '906 discloses the average tilt angle in the retarder as from 2 to 88 degrees (Page 6 lines 20-33).

Regarding claim 3, Aminaka '906 discloses the tilt angled in the retarder as varying monotonously in a direction perpendicular to the plane of the film from a minimum value at one surface of the film to a maximum value at the opposite side of the film (Figure 7; Page 6 lines 20-33).

Regarding claim 4, Aminaka '906 discloses the minimum tilt angle in the retarder as from 0 to 80 degrees (Page 6 lines 30-33).

Regarding claim 5, Aminaka '906 discloses the maximum tilt angle in the retarder as from 10 to 90 degrees (Page 6 lines 30-33).

Regarding claim 6, Aminaka '906 fails to limit the range of the thickness of the retarder as from 0.1 μm to 10 μm . Aminaka '906 discloses the preferred range of the thickness as from 0.5 μm to 30 μm .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have limited the thickness of the retarder to the proposed thickness. Aminaka '906 discloses an overlapping range for the thickness of the retarder. It would have been an engineering expediency to have constructed the retarder within the proposed thickness range to accommodate for the desired viewing contrast and gray scale properties given the construction of the liquid crystal cell and the application of the display. Such a choice within the range would

have been motivated by a desire to obtain the expected results of such a choice as are old and well known in the art.

Regarding claim 7, Aminaka '906 discloses the optical retardation of the O plate as from 6 to 300 nm (Page 8 lines 1-4, Table--Re¹).

Regarding claim 8, Aminaka '906 fails to limit the thickness range of the transparent substrate as between 20 to 200 μm . Aminaka '906 discloses the transparent substrate as having a thickness between 20 to 500 μm .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have limited the thickness of the DAC film layer to the proposed thickness. Aminaka '906 discloses an overlapping range for the film thickness. It would have been an engineering expediency to have constructed the layer within the proposed thickness range to accommodate for the desired viewing contrast and gray scale properties given the construction of the liquid crystal cell and the application of the display. Such a choice within the range would have been motivated by a desire to obtain the expected results of such a choice as are old and well known in the art.

Regarding claim 9, Aminaka '906 fails to limit the retardation range of the DAC film as from 2 to 100 nm. Aminaka '906 discloses the DAC film as having a retardation range between 0 and 200 nm and preferably between 10 and 100 nm.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have limited the retardation of the DAC film layer to the proposed value. Aminaka '906 discloses an overlapping range for the film retardation. It would have been an engineering expediency to have constructed the layer within the proposed retardation range to accommodate

for the desired viewing contrast and gray scale properties given the construction of the liquid crystal cell and the application of the display. Such a choice within the range would have been motivated by a desire to obtain the expected results of such a choice as are old and well known in the art.

Regarding claim 10, Aminaka '906 discloses the layer as comprising a linear or crosslinked polymerized liquid crystalline material with a tilted or splayed structure (Page 8 lines 43-58, Page 9 lines 1-9).

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aminaka '906 in view of Koch as applied to claims 1-10 above, and further in view of Aminaka '457 (U.S. Patent No. 6,064,457).

Regarding claim 11, Aminaka '906 fails to disclose the liquid crystal display device structure utilizing the optical compensator as proposed. Aminaka '457, however, teaches using such a compensator in the liquid crystal display device structure proposed. Aminaka '457 teaches using such a compensator in a cell formed by two transparent substrates having an inside electrode layer (Figure 1 elements 14a, 14b, 13a, and 13b), a polarizer arranged outside the transparent substrate (Figure 3 element 34), and the optical compensator (Figure 3 elements 31, 32, and 33) in a stacked configuration.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed the optical compensator in such a liquid crystal display device. One would have been motivated to place the optical compensator as such in order to benefit from the

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compensator as performing the enhancement in contrast and gray scale from wide viewing angles as taught by Aminaka '906 and Aminaka '457.

Regarding claim 12, Aminaka '906 fails to disclose the optical compensator as used within a device characterized as a TN, HTN, or STN display. Aminaka '457, however, teaches the use of such a compensator in such a display having a chiral alignment (Column 21 lines 60-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the compensator disclosed by Aminaka '906 in a liquid crystal cell, such as taught by Aminaka '457. The placement of the compensator within such a cell would have been advantageous for improving contrast and gray scale of the display from wide viewing angles. Although Aminaka '906 fails to teach the use of the compensator in a TN, HTN, or STN device, Aminaka '457 teaches that the compensator would be useful for such a device. One would have been motivated to place the compensator in such a device to improve the versatility and marketability of the LCD device.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5,805,253 to Mori et al. as an alternative liquid crystal display and optical compensator device.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (703) 305-7913.

The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



mhc
April 29, 2003



DAVID V. BRUCE
PRIMARY EXAMINER